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BIOMED

RESEARCH LABORATORIES, INC.

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JAN 31 1984

RECEIVED DEPARTMENT OF ECOLOGY
SPOKANE REGIONAL OFFICE
NOV - 1 1983

October 21, 1983

Spokane Steel Foundry
c/o Tenold & Dunham
North 3808 Sullivan Road
Spokane Industrial Park
Spokane, Washington 98216

Dear Sirs:

Enclosed is a copy of our lab results on the six metals we tested to determine the probable cause of fish mortality in the LC_{50} testing.

In addition to the four heavy metals tested, we also tested for Calcium and Magnesium levels. We did not find high enough levels to afford any protection to the fish from heavy metal toxicity. The data in the accompanying report are given in the EP toxic extraction format. These values are not the amount of the metal in the actual sample, but the amount of material extractable by a 24 hour mild acid extraction.

If you divide the ppm given in the report by 50, you get the maximum level of the metal in the 1000 ppm fish LC_{50} test. If we calculate the maximum level of metals, in a 1000 ppm fish LC_{50} test, we find toxic metal levels in two of the samples. In the Lab Sample #10056, the Zinc Level could be as high as 0.74 ppm and the Copper level as high as 0.068 ppm respectively. In Lab Sample #10058, the Zinc level could be as high as 0.15 ppm. The toxic levels for Zinc in fresh water can be as low as 0.05 ppm, and Copper as low as 0.03 ppm in waters with low hardness values. Sample #10056 could have killed fish due to high Zinc and Copper levels. Sample #10058 could have killed the fish due to high Zinc levels.

In the fish test system, leaching the heavy metals would probably take longer than in the mild acid environment of the EP toxic extraction; however, the same amount of metal could be leached from the sample with ordinary water.

Debbie 921-9141

1115 East Pike Street, Seattle, Washington 98122 (206) 324-0380

At this point, we need to hear if the EPA has accepted the testing proposal mailed to your firm under separate cover. We also need to corelate the samples we received from you with the samples the DOE took at the Spokane Steel Foundry.

If we can be of further assistance, please don't hesitate to call.

Sincerely,

Robert Tedrow

Robert Tedrow,
Production Director

ATOMED
RESEARCH LABORATORIES, INC.
115 East Pike St., Seattle, WA 98122
(206) 324-0380

INVOICE

NO. 4117

DATE October 25, 1983

SOLD TO

Spokane Steel Foundry
c/o Tenold & Dunham
North 3808 Sullivan Road
Spokane Industrial Park
Spokane, Washington 99216

SHIPPED TO

OUR ORDER NO.	YOUR ORDER NO.	SALESMAN	TERMS	SHIPPED VIA	Ppd. or Coll.

QUANTITY	DESCRIPTION	PRICE	AMOUNT
3	EPToxicity -Chemical analysis of foundry waste only Lab #10056, Pyno Tech 10057, Furnace 2 10058, Furnace 3	(b) (4)	

BIOMED
RESEARCH LABORATORIES, INC.

October 19, 1983

Spokane Steel Foundry
c/o Tenold & Dunham
North 3808 Sullivan Road
Spokane Industrial Park
Spokane, Washington 99216

SUBJECT: Chemical analysis of foundry waste.

RESULTS:

Lab #	Sample	% Ash
10056	Pyno Tech	99.52
10057	Furnace 2	91.98
10058	Furnace 3	99.37

EP TOXICITY EXTRACTION:

Lab #	Mn(ppm)	Ni(ppm)	Zn(ppm)	Cu(ppm)	Ca(ppm)	Mg(ppm)
10056	103.0	0.570	37.0	3.44	48.0	6.56
10057	1.96	0.025	1.73	< 0.01	29.2	5.30
10058	15.0	0.135	7.81	0.01	3.90	2.97

Respectfully submitted,

Floyd R. Kirk

Floyd R. Kirk
Chemist

1115 East Pike Street, Seattle, Washington 98122 (206) 324-0380